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1 [Security on FPGAs: State-of-the-art implementations and attacks](#)



Thomas Wollinger, Jorge Guajardo, Christof Paar

August 2004 **ACM Transactions on Embedded Computing Systems (TECS)**, Volume 3 Issue 3

Publisher: ACM Press

Full text available: pdf(296.79 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In the last decade, it has become apparent that embedded systems are integral parts of our every day lives. The wireless nature of many embedded applications as well as their omnipresence has made the need for security and privacy preserving mechanisms particularly important. Thus, as field programmable gate arrays (FPGAs) become integral parts of embedded systems, it is imperative to consider their security as a whole. This contribution provides a state-of-the-art description of security issues ...

Keywords: Cryptography, FPGA, attacks, cryptographic applications, reconfigurable hardware, reverse engineering, security

2 [Hardware specialization: Energy management for commodity short-bit-width microcontrollers](#)



Rony Ghattas, Alexander G. Dean

September 2005 **Proceedings of the 2005 international conference on Compilers, architectures and synthesis for embedded systems CASES '05**

Publisher: ACM Press

Full text available: pdf(462.68 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Dynamic frequency scaling and dynamic voltage scaling have been developed to save power and/or energy for general purpose computing platforms and high-end embedded systems. This paper examines the practicality of using these advanced techniques to save power and energy for commodity 8-bit microcontrollers while leveraging their built-in low-power modes. The benefits of the techniques are weighed against their complexity and cost. First, we mathematically model the power dissipation characteristi ...

Keywords: dynamic frequency scaling, dynamic voltage scaling, embedded systems, energy modeling, short-bit-width microcontroller

3 [Efficient identification of hot data for flash memory storage systems](#)



Jen-Wei Hsieh, Tei-Wei Kuo, Li-Pin Chang

February 2006 **ACM Transactions on Storage (TOS)**, Volume 2 Issue 1

Publisher: ACM Press

Full text available: [pdf\(557.23 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Hot data identification for flash memory storage systems not only imposes great impacts on flash memory garbage collection but also strongly affects the performance of flash memory access and its lifetime (due to wear-levelling). This research proposes a highly efficient method for on-line hot data identification with limited space requirements.

Different from past work, multiple independent hash functions are adopted to reduce the chance of false identification of hot data and to provide predic ...

Keywords: Storage system, flash memory, garbage collection, workload locality

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EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S2	27714	"711"/\$.cls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 14:24
S3	91453	flash adj memory	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 13:14
S4	7530	eras\$4 near2 block\$2	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 13:14
S5	1341717	module\$2 or chip\$2	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 13:15
S6	74234	(new or update\$) adj data	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 13:15
S7	74870	(new or update\$ or fresh\$4) adj data	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 13:16
S8	4004	((new or update\$ or fresh\$4) adj data) near3 (writ\$4 or stor\$4)) same (chip\$2 or module\$2 or unit\$2)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 13:19
S9	4617	S3 and S4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 13:18
S10	198	S8 and S9	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 13:18

EAST Search History

S11	592	(((new or update\$ or fresh\$4) adj data) near3 (writ\$4 or stor\$4)) same (chip\$2 or module\$2 or unit\$2) same "same"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 13:19
S12	49	S9 and S11	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 14:11
S13	129	(Tomohiro near Hayashi).in.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 14:11
S14	2	S12 and S13	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 14:22
S15	63570	(data near2 size)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 14:35
S16	464648	(estimat\$5 or determin\$4) near4 (time or power)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 14:23
S17	911	S15 same S16	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 14:24
S18	1549	"711"/103.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 14:24
S19	10	S17 and S18	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 14:24
S20	385	(size near2 data) same (estimat\$4 or determin\$4) same ("how long" or power)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 14:37

EAST Search History

S21	29	S2 and S20	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 14:48
S22	3	S21 and @ad<"19940819"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 14:51
S23	54	S20 and @ad<"19940819"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/26 14:51



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- #2 (eprom* or EPROM* or ROM) and (block* or segment*)
- #3 (determin* or estimat*) and (power or size)
- #4 (data size or address size<IN>metadata)
- #5 ((power control*) or (power reservation)<IN>metadata)
- #6 (((module or integrated chip or ic)<in>metadata) <AND> ((eprom* or EPROM* or ROM) and (block* or segment*)))
- #7 ((determin* or estimat*) and (power or size)) <AND> ((data size or address size<IN>metadata))
- #8 (((power control*) or (power reservation)<IN>metadata) <AND> (((determin* or estimat*) and (power or size)) <AND> ((data size or address size<IN>metadata))))
- #9 (((module or integrated chip or ic)<in>metadata) <AND> ((eprom* or EPROM* or ROM) and (block* or segment*))) <AND> (((power control*) or (power reservation)<IN>metadata) <AND> (((determin* or estimat*) and (power or size)) <AND> ((data size or address size<IN>metadata))))

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